MULTIMEDIA UNIVERSITY

STUDENT ID NO

# MULTIMEDIA UNIVERSITY

# FINAL EXAMINATION

**TRIMESTER 3, 2018/2019**

## DCS5128 – SYSTEMS ANALYSIS AND DESIGN

(For Diploma students only)

27 MAY 2019
2:30 p.m. – 4:30 p.m.
(2 Hours)

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**INSTRUCTIONS TO STUDENT**

1. This question paper consists of **5 pages.**
2. Answer **ALL** questions in **Section A, Section B** and **Section C** in the Answer Booklet.

## SECTION A: 10 MULTIPLE CHOICE QUESTIONS (10 MARKS)

*Instruction: Write **ALL** your answer in the answer booklet provided.*

1. What is the acronym for SDLC?
   A. Source Development Life Cycle.
   B. Systems Development Life Cycle.
   C. Software Development Life Cycle.
   D. Sourcecode Development Life Cycle.

2. Which of the following statements is **FALSE** about SDLC?
   A. The process of developing information systems through planning, analysis, design, implementation and maintenance.
   B. The traditional methodology used to develop, maintain, and replace information systems.
   C. A circular process, with the end of the useful life leading to the start of another.
   D. Based on the notion of decrement commitment.

3. _____ is the provision of computing resources, including applications, over the Internet, so customers do not have to invest in the computing infrastructure needed to run and maintain the resources.
   A. Web applications
   B. Software as a Service
   C. Cloud computing
   D. Cloud storage

4. All the following are the reasons of outsourcing **EXCEPT**:
   A. Reducing time to market.
   B. Freeing up internal resources.
   C. Increasing process efficiencies.
   D. Decreasing the revenue potential of the organisation.

5. All of the following statements are **TRUE** about evolutionary prototyping **EXCEPT**:
   A. Software development method where the developer or development team first constructs a prototype.
   B. Prototype becomes the actual production system.
   C. Prototype is not preserved once system is built.
   D. Begins by modeling part of the target system.

6. An entity type should be named as following **EXCEPT**:
   A. Concise.
   B. A singular noun.
   C. Process of the event.
   D. Specific to the organisation.

**Continued...**

7. Which of the following is **NOT** a key feature of physical database design?

   A. Arranging related records in secondary memory (hard disks and magnetic tapes) so that records can be stored, retrieved and updated rapidly.
   B. Choosing a storage format for each attribute from the logical database model.
   C. Grouping attributes from the logical database model into physical records.
   D. Selecting the media for backup and recovery planning.

8. A _____ indicates the data represented as a set of related tables or relations.

   A. dedicated database model
   B. relational database model
   C. distributed database model
   D. centralised database model

9. Which of the following are included in the table of contents of a Master Test Plan?

   I. Objectives
   II. Software description
   III. Methods
   IV. Risk Assessment

   A. I and II
   B. I, II and III
   C. II and IV
   D. All of the above

10. Which of the following **BEST** describes the statement below?

> *"Tries to break the system (e.g., what happens when a record is written to the database with incomplete information or what happens under extreme online transaction loads or with a large number of concurrent users)"*

   A. Stress testing
   B. System testing
   C. Security testing
   D. Performance testing

**Continued...**

## SECTION B: 10 TRUE/FALSE QUESTIONS (10 MARKS)

*Instruction: Write **ALL** your answer in the answer booklet provided.*

1. Current practice of SDLC combines the activities traditionally thought of as belonging to analysis, design, and implementation into a single process.
2. Systems software is an organisational role that is most responsible for analysis and design of information systems.
3. Skilled and experienced developer is one of the factors related to successful reuse in software development.
4. Abstraction, storage and re-contextualisation are the three basic steps of software reuse.
5. Closed-ended questions in interviews ask the respondents to choose from among a set of specified responses.
6. Relationship is an association between the instances of one or more entity types that is of interest to the organisation.
7. Foreign key is the attribute that appears as a non-primary key attribute in one relation and as a primary key attribute (or part of a primary key) in another relation.
8. Purging enables the process of splitting or combining normalised relations into physical tables based on affinity of use of rows and fields.
9. A master test plan is developed in the analysis phase during Software Application Testing.
10. Recovery testing verifies that protection mechanisms built into the system will protect it from improper penetration.

**Continued...**

## SECTION C: 3 STRUCTURED QUESTIONS (30 MARKS)

*Instruction: Write **ALL** your answer in the answer booklet provided.*

### QUESTION 1 [10 MARKS]

***Table 1*** below represents an IS (information system) project set of activities, its expected completion time (in weeks) and preceding activities.

| Activity | Preceding Activity | Expected Time (ET) | Earliest Completion Time ($T_E$) | Latest Completion Time ($T_L$) | Slack Time (ST) |
|---|---|---|---|---|---|
| A | - | 20 | | | |
| B | A | 17 | | | |
| C | B | 12 | | | |
| D | C | 23 | | | |
| E | C, D | 12 | | | |
| F | C | 8 | | | |
| G | E | 22 | | | |
| H | F, G | 6 | | | |

*Table 1: Information System Activities*

a) Draw a network diagram for the IS project shown in *Table 1*. [3 marks]

b) For each activity, calculate its earliest completion time ($T_E$), latest completion time ($T_L$) and slack time. Copy the shaded area of the given table and fill out. [5 marks]

c) If activity F is delayed by 40 weeks, what impact will it have on the project duration? [1.5 marks]

d) List the activities on the critical path (*CP*). Shade the critical path in the network diagram. [0.5 mark]

**Continued...**

## QUESTION 2 [10 MARKS]

The following are the basic processes of *Boarding School Outing System.*

- Student may *enter the outing request* such as date, reason, check-out time (check-in time is auto-set at 6.00 PM) to request for outing. The outing request details are stored in 'Outing Request' record.
- Warden can *view the outing request* and he/she may *approve or disapprove* the request. The status of the request is updated in the 'Outing Request' record.
- Once the status is updated, a short message service (SMS) *notification will be sent* by the system to the student and parents. The hand-phone numbers are retrieved from the 'Student' record.
- Student will *check-out and check-in* via this system whenever he/she is about to leave from the school and reports back to the school. The data (date and time) is kept in the existing outing record.

*Note:*
**Definition of outing (in boarding school context): A day out from the hostel/school, normally during the weekend.

Based on the scenario above:

a) Draw a Context Diagram for Boarding School Outing System. [1.5 marks]

b) Draw a Data Flow Diagram (level 0) for the system with general processes, data stores, data flows and sources/sink. [8.5 marks]

## QUESTION 3 [10 MARKS]

a) Lim Meng has recently started an online cake ordering shop. Based on customers' feedback, Lim Meng realised that his website is well accepted. Describe any **TWO (2)** design guidelines that Lim Meng has most likely followed when designing his cake ordering website.

[3 marks]

b) Describe **TWO (2)** situations in which highlighting can be used to convey special information to users.

[2 marks]

c) List and briefly explain **FIVE (5)** types of testing in system development.

[5 marks]

**End of Page.**